

# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

#### Device for Assembling and Fastening Elements of Furniture

I, JOSEPH DE WACHTER, of Belgian nationality, of Hoboken, near Antwerp (Belgium), Fakkelsestraat, 30, do hereby declare the invention, for which I pray that a patent may be granted to me, and the process by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a fastening device for assembling and fastening together constituent parts of furniture, and particularly relates to a device of the type comprising a peg adapted to be secured in one of the parts to be assembled, co-operating with a cam surface in a blind hole in a second part to be assembled.

Various embodiments of this type of device have previously been suggested for assembling and fastening together constituent parts of pieces of furniture. Thus one device consists of the peg carrying a threaded part near one of its ends, and near the other end there is an annular groove which delimits a head of conical shape. The rotating cam component is made of two parts, and comprises two discs which are fastened together at their peripheries, both discs having on their inner faces a rib forming a curved cam surface which is identical for both discs and is assymetrically disposed on their inside surfaces. In the periphery of one of the discs there is a cut-out part which enables engagement of one of the disc components into the blind hole past the projecting peg projecting thereon from the first part of the furniture, to engage the curved cam surface formed from both ribs into the groove of the conical head of the projecting peg fastened to the second element of the piece of furniture, rotation of the cam surfaces bringing both parts of the furniture into close and rigid attachment by the curved cams exerting a gradual

pull onto the projecting peg until the parts are firmly clamped together.

Devices as hereinbefore described are required to be constructed with a thick section, particularly when fabricated from a light alloy, as the disc elements are joined together only over a small part of their peripheries, which are subjected to large stresses during tightening, and are thus likely to be distorted.

The object of the present invention is to provide a fastening device of the type hereinbefore described in which the two disc portions are assembled rapidly and securely by means of a hub element on an internal surface of one of the disc portions engaging a corresponding hole in the other disc portion whereby the two disc portions are held together. By the construction of the invention stresses generated in rotating the device to bring the two parts of the furniture together are transmitted through the hub portion rather than in the perimeter, and thus the device is less liable to distortion or breakage.

Thus according to the invention we provide a fastening device for assembling and fastening furniture of the type comprising a peg adapted to be secured into one of the parts of furniture to be assembled and having a grooved head, and a disc element consisting of two disc portions each having on their internal surfaces a matching cam surface assymetrically disposed, one of the disc surfaces having a cut-out part whereby the assembled disc element may be mounted on the head of the said peg and rotated to engage the cam surfaces with the groove of the peg; in which the first disc portion has a hub member and the second disc portion a corresponding hole to receive said hub member, the disc element being assembled by securing said hub member in

[Price]

said hole.

To secure the first disc portion to the second disc portion, the top of the hub member may be rivetted or swaged over the outside surface of the second disc portion. The hub portion of the first disc portion and the corresponding hole in the second disc portion are preferably mounted slightly off centre of the disc.

In manufacturing the disc portions of the invention the two parts may be made of different materials, one of which may be of high quality and finish intended for the visible part when assembled, whereas the other part intended for insertion in the blind hole may be made of a material which has an equally good strength but is of less attractive appearance and finish, and is thus cheaper to manufacture. Also both disc portions can be manufactured by facile industrial processes, such as stamping, injection casting and moulding with a minimum of finishing.

According to a feature of the invention the hub portion may have a square or rectangular base portion adapted to fit into a corresponding slot in the female disc portion whereby the rotation of one disc portion rotates the female disc portion with it.

An embodiment of the invention is hereinafter described and illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal section of an assembly made with the device according to the invention;

Figure 2 is an exploded view of the device of claim 1;

Figures 3, 4, 5 and 6 are sections of the disc assembly as seen respectively in the direction of the arrows F3, F4, F5, F6 of Figure 2;

Figure 7 is an exploded view of the combination illustrated in Figures 1 to 6;

Figure 8 is a sectional view of the combination of Figures 1 to 7 fitted in the corresponding parts of a piece of furniture;

Figure 9 represents an assembly of both elements of the piece of furniture which are represented in Figure 8;

Figure 10 is a cross-section along line X-X of Figure 9.

Referring to the aforesaid drawings, the device comprises a rotatable disc assembly formed from two disc portions 1-2, and a peg 3. Disc portion 1, which constitutes the female element, consists of a disc 4 on the periphery of which is a cut-out 5; on its inside face there is a curved cam surface 6, and slightly out of centre on that same face, there is a raised portion 7 of elliptical cross-section. In the middle of this elliptically shaped raised portion, a conical hole 8 is drilled right through and is provided with a deep chamfer 9 on its outer end. In the other end of aforesaid

raised portion 7, a wide diametral groove 10 is milled.

Disc portion 2, which is the male element, consists of a disc 11 having on its inside face a curved cam surface 12 which corresponds to aforesaid cam surface 6. Near the central part of this same face and slightly out of centre therewith, there is a hub element 13, the cross-section of which has an elliptical shape similar to that of raised portion 7; and which extends into a trunnion shaped so as to be fitted into the conical hole 8 of part 1. The outer face of aforesaid trunnion is provided with a chamfer 15, the edge of which can be easily rivetted or swaged over onto the chamfer 9 in order to clinch part 1 and part 2 together. Between aforesaid hub 13 and trunnion 14, flats 16-17 are provided to form a cross-section of rectangular shape suitable for engaging the wide groove 10 of aforesaid hub 7 of part 1. On account of this disposition, both parts 1-2, closely fitting together, are positively held together during rotation of the disc assembly as a whole.

On the outer face of disc portion 11, slots are provided for the reception of a screw-driver or similar tool, whereby the disc assembly as a whole may be rotated to engage the peg 3.

The peg 3 has a head 19 delimited by the circumferential annular groove 20. The head 19 is characterized by the fact that its face 21 is adapted to come into contact with the curved cams 6-12 and has a curvature corresponding to that of the friction surface of the cam surfaces 6-12.

Parts 1-2 are assembled coaxially by introducing trunnion 14 into the conical hole 8, by engaging the part of rectangular cross-section delimited by the flats 16-17 into the diametral groove 10 and by rivetting or swaging the peripheral edge of aforesaid trunnion 14 into the chamfer 9.

This combination of elements according to the invention is further represented in Figures 7 to 10 of the accompanying drawings. The peg 3 is adapted to fit into a nut 22. The nut 22 substantially consists of a socket with a central bore 23 which carries a screw thread over part of its length 24, to co-operate with the threaded part of aforesaid peg 3.

Onto the outer surface of aforesaid nut 22 a coarse and preferably sharp cutting screw thread 25 is provided, by means of which aforesaid nut can be screwed into an appropriate blind hole drilled into one of the portions of furniture to be assembled. The outer end of the nut is provided with a flange 27.

In order to make it possible to screw the socket or nut 22 into the piece of furniture or to unscrew it therefrom—although the

need rarely occurs in practice, a groove or slit can be provided into the upper part of aforesaid socket or nut, which will enable the part to be rotated by means of a screw-driver. The screw threads 24-25 are mutually opposed, i.e. righthand and lefthand respectively, in order to prevent any undesirable displacement during screwing and unscrewing of the peg.

10 WHAT I CLAIM IS:—

1. A fastening device for assembling and fastening furniture of the type comprising a peg adapted to be secured into one of the parts of furniture to be assembled and  
15 having a grooved head, and a disc element consisting of two disc portions each having on their internal surfaces a matching cam surface assymetrically disposed, one of the disc surfaces having a cut-out part whereby  
20 the assembled disc element may be mounted on the head of the said peg and rotated to engage the cam surfaces with the groove of the peg; in which the first disc portion has a hub member and the second disc portion  
25 a corresponding hole to receive said hub member, the disc element being assembled

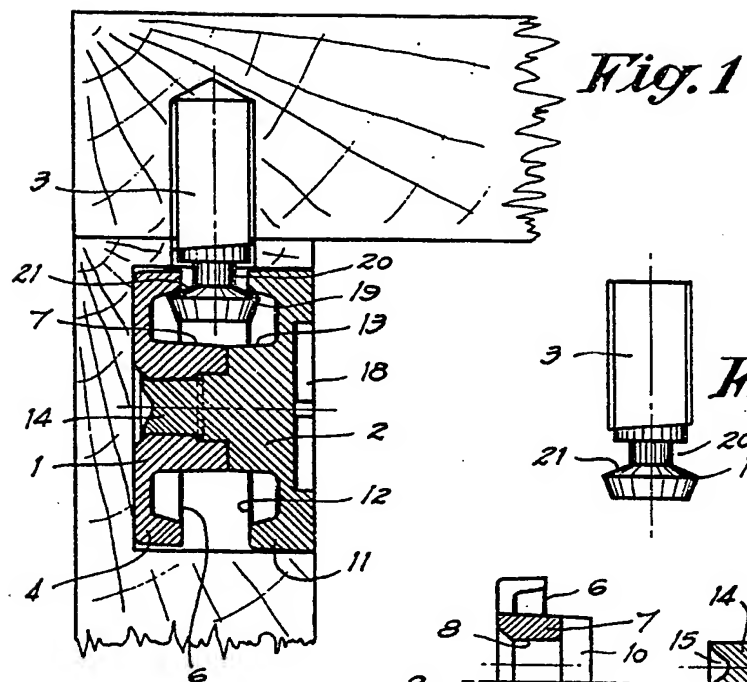
by securing said hub member in said hole.

2. A fastening device as claimed in claim 1 wherein the first disc portion is secured to the second disc portion by rivetting or  
30 swaging the top of the hub member over the outside surface of the second disc member.

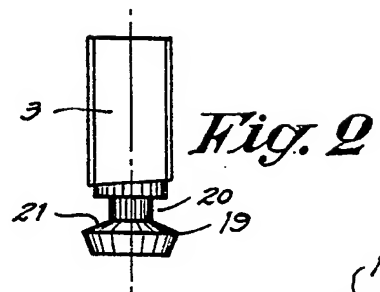
3. A fastening device as claimed in claim 1 or claim 2 in which the hub portion has  
40 a rectangular base portion, and the second disc portion has a corresponding slot to receive said rectangular base portion, whereby the disc element may be rotated as  
45 a whole.

4. A fastening device for assembling and fastening furniture, substantially as hereinbefore described and illustrated in the accompanying drawings.

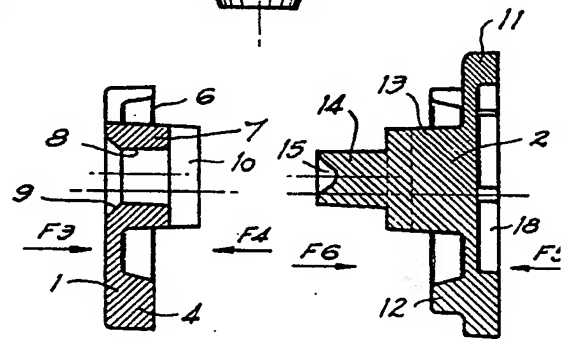
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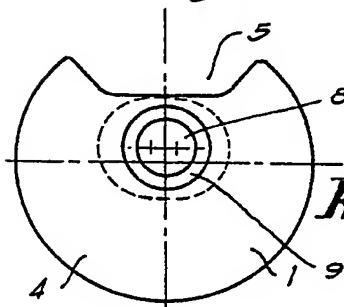
*Fig. 1*



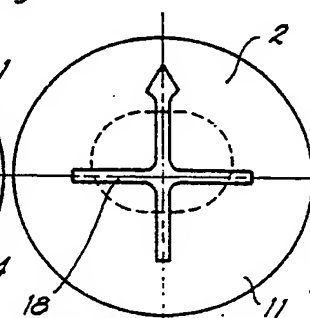
*Fig. 2*



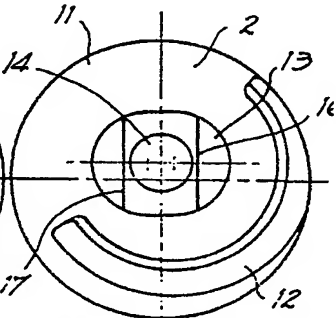
*Fig. 3*



*Fig. 4*



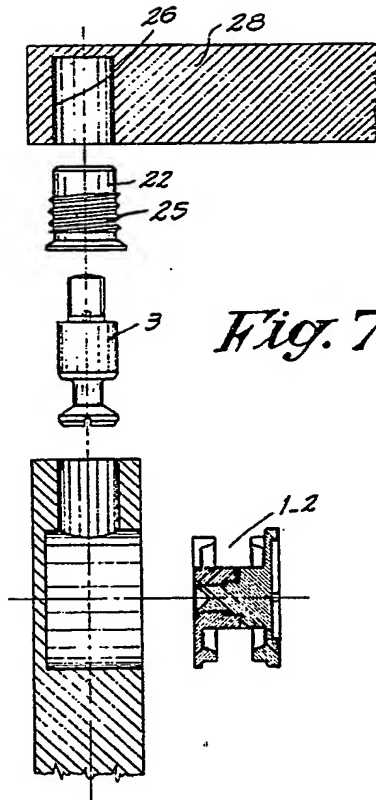
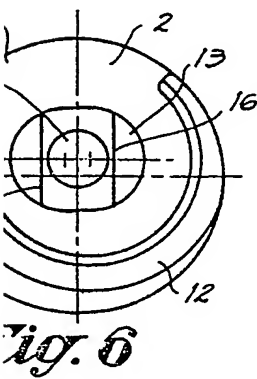
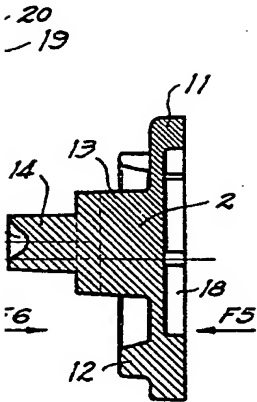
*Fig. 5*



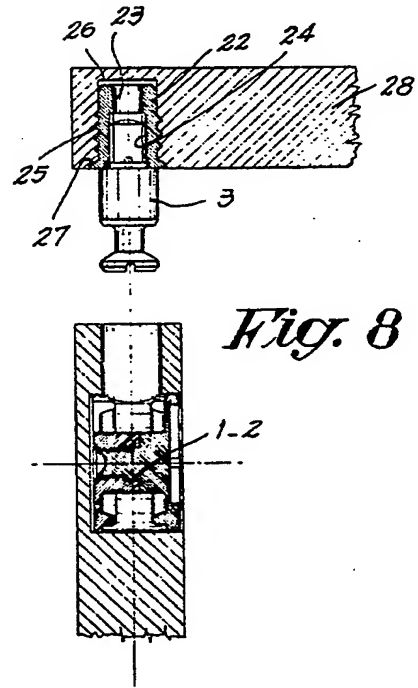
*Fig. 6*

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*Fig. 2*

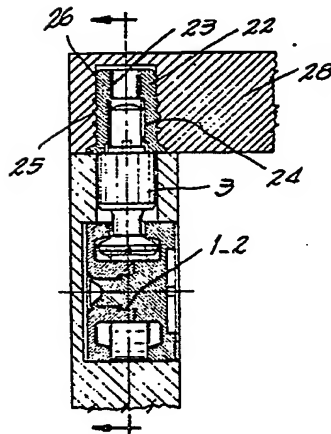


*Fig. 7*

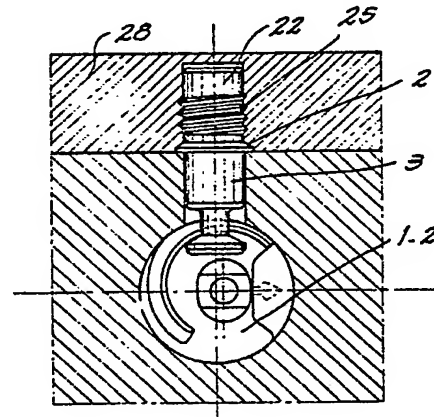


*Fig. 8*

*Fig. 9*



*Fig. 10*



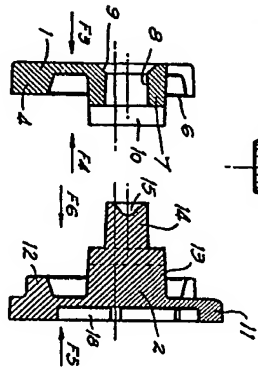
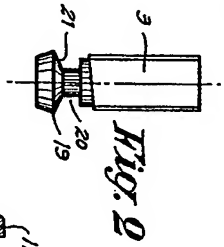
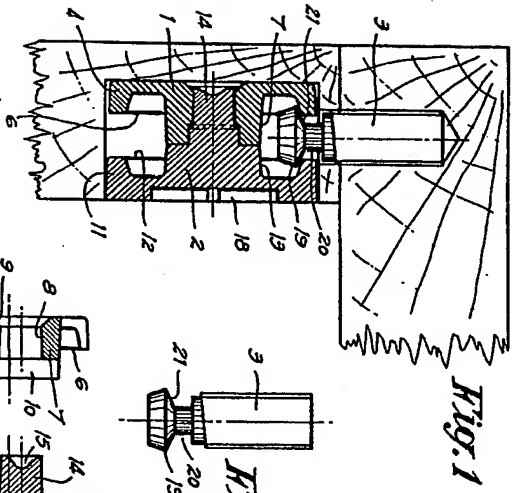


Fig. 3

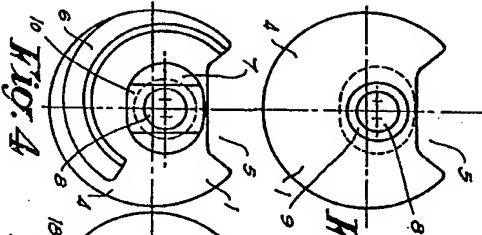


Fig. 4

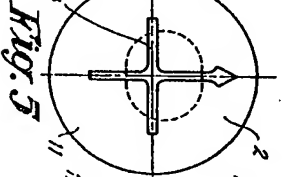


Fig. 5

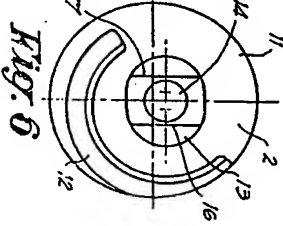


Fig. 6

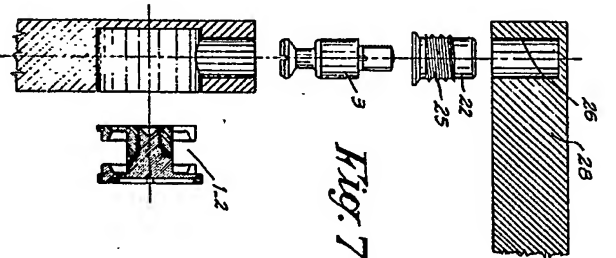


Fig. 7

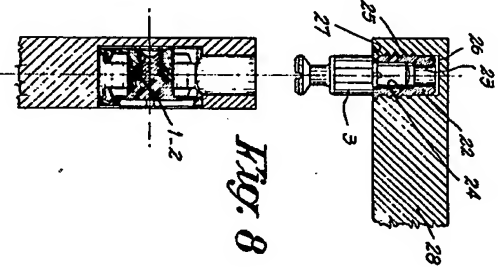


Fig. 8

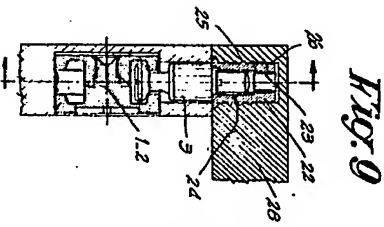


Fig. 9

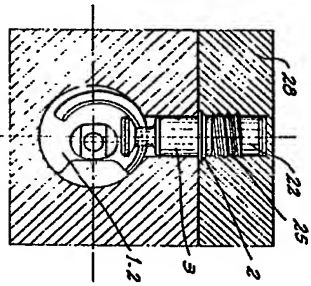


Fig. 10